# PATENT COOPERATION TREATY

# **PCT**

# TRANSLATION INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

| Applicant's or agent's file reference  B 14467 PM                            | FOR FURTHER A  | CTION                      | See Form PCT/IPEA/416                           |  |  |  |  |  |
|--|--|----------------------------|---|--|--|--|--|--|
| International application No.  | International filing da  | nte (day/month/year)       | Priority date (day/month/year)                  |  |  |  |  |  |
| PCT/FR2004/00340   | 6 29.12.200  | 4                          | 30.12.2003                                      |  |  |  |  |  |
| International Patent Classification (IPC) or national classification and IPC |  |                            |   |  |  |  |  |  |
| G01T1/17   |  |                            |   |  |  |  |  |  |
|  |  |                            |   |  |  |  |  |  |
| Applicant  |  |                            |   |  |  |  |  |  |
| COMMISSARIAT A L   | ENERGIE ATOMIÇ   | ĴΩF:                       |   |  |  |  |  |  |
|  |  |                            |   |  |  |  |  |  |
|  | 1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36. |                            |   |  |  |  |  |  |
| 2. This REPORT consists of a   | total of 5   | sheets, including          | g this cover sheet.                             |  |  |  |  |  |
| <ol> <li>This report is also accompar</li> </ol>                             | nied by ANNEXES, comprising:   |                            |   |  |  |  |  |  |
| a. (sent to the apple  | cant and to the International Bu   | ureau) a total of 5        | sheets, as follows:                             |  |  |  |  |  |
| sheets of the  | ne description, claims and/or dra  | wings which have been a    | mended and are the basis for this report and/or |  |  |  |  |  |
|  | sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).   |                            |   |  |  |  |  |  |
|  | sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond  |                            |   |  |  |  |  |  |
| Box.   | ure in the international applicat  | ion as filed, as indicated | in item 4 of Box No. I and the Supplemental     |  |  |  |  |  |
| b. (sent to the Inter  | national Bureau only) a total of   | (indicate type and number  | r of electronic carrier(s))                     |  |  |  |  |  |
|  |  |                            | , containing a sequence listing and/or tables   |  |  |  |  |  |
|  |  | is indicated in the Supple | mental Box Relating to Sequence Listing (see    |  |  |  |  |  |
|  | Administrative Instructions).  |                            |   |  |  |  |  |  |
| 4. This report contains indicati   | ons relating to the following iter   | ns:                        |   |  |  |  |  |  |
| Box No. I Ba   | sis of the report  |                            |   |  |  |  |  |  |
| Box No. II Pri   | ority  |                            |   |  |  |  |  |  |
| Box No. III No   | on-establishment of opinion with   | regard to novelty, inventi | ive step and industrial applicability           |  |  |  |  |  |
| Box No. IV La  | ck of unity of invention   |                            |   |  |  |  |  |  |
|  |  |                            |   |  |  |  |  |  |
| Box No. VI Ce  | rtain documents cited  |                            |   |  |  |  |  |  |
| Box No. VII Ce   | rtain defects in the international   | application                |   |  |  |  |  |  |
| Box No. VIII Ce  | Box No. VIII Certain observations on the international application   |                            |   |  |  |  |  |  |
| Date of submission of the demand   |  | Date of completion of thi  | s report  |  |  |  |  |  |
|  |  | F                          | •   |  |  |  |  |  |
| Name and mailing address of the IPEA   | A/EP   | Authorized officer         |   |  |  |  |  |  |
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## INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.
PCT/FR2004/003406

| Вох | No. I       | Е  | Basis of the report  |                                    |                                      |  |  |  |  |
|-----|-------------|--|--|------------------------------------|--------------------------------------|--|--|--|--|
| 1.  |             |  | the language, this report is based on the internation r this item.   | nal application in the language in | which it was filed, unless otherwise |  |  |  |  |
|     |             |  | report is based on translations from the original language into the following language this the language of a translation furnished for the purposes of: |                                    |                                      |  |  |  |  |
|     |             | inte   | international search (Rule 12.3 and 23.1(b))   |                                    |                                      |  |  |  |  |
|     |             | D put  | blication of the international application (Rule 12.4)   | 1                                  |                                      |  |  |  |  |
|     |             | inte   | ernational preliminary examination (Rule 55.2 and/   | or 55.3)                           |                                      |  |  |  |  |
| 2.  | rece        | With regard to the <b>elements</b> of the international application, this report is based on (replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report): |  |                                    |                                      |  |  |  |  |
|     |             | the interr   | national application as originally filed/furnished   |                                    |                                      |  |  |  |  |
|     | $\boxtimes$ | the descr  | ription:   |                                    |                                      |  |  |  |  |
|     |             | pages  | 1-39   |                                    | as originally filed/furnished        |  |  |  |  |
|     |             | pages*   |  | received by this Authority on      |                                      |  |  |  |  |
|     |             | pages*   |  | received by this Authority on      |                                      |  |  |  |  |
|     | $\boxtimes$ | the claim  | as:  |                                    |                                      |  |  |  |  |
|     |             | nos.   |  |                                    | as originally filed/furnished        |  |  |  |  |
|     |             | nos.*  |  | as amended (together               | with any statement) under Article 19 |  |  |  |  |
|     |             | nos.*  | 1-22   | received by this Authority on      | 10.10.2005 with telefax              |  |  |  |  |
|     |             | nos.*  |  | received by this Authority on      |                                      |  |  |  |  |
|     | $\boxtimes$ | the draw   | ings:  |                                    |                                      |  |  |  |  |
|     |             | sheets   | 1/7-7/7  |                                    | as originally filed/furnished        |  |  |  |  |
|     |             | sheets*  |  | received by this Authority on      |                                      |  |  |  |  |
|     |             | sheets*  |  | received by this Authority on      |                                      |  |  |  |  |
|     |             | a sequen   | ice listing and/or any related table(s) – see Supplement   | ental Box Relating to Sequence Li  | isting.                              |  |  |  |  |
| 3.  | $\boxtimes$ | The ame  | endments have resulted in the cancellation of:   |                                    |                                      |  |  |  |  |
|     |             | the  | e description, pages   |                                    |                                      |  |  |  |  |
|     |             | the the  | the claims, nos. 1-21  |                                    |                                      |  |  |  |  |
|     |             | the  | the drawings, sheets/figs  |                                    |                                      |  |  |  |  |
|     |             | the  | the sequence listing (specify):  |                                    |                                      |  |  |  |  |
|     |             | any  | y table(s) related to sequence listing (specify):  |                                    | _                                    |  |  |  |  |
| 4.  |             |  | ort has been established as if (some of) the amend<br>e been considered to go beyond the disclosure as fil   |                                    |                                      |  |  |  |  |
|     |             | the  | e description, pages   |                                    | <u> </u>                             |  |  |  |  |
|     |             | the  | e claims, nos.   |                                    |                                      |  |  |  |  |
|     |             | L the  | the drawings, sheets/figs  |                                    |                                      |  |  |  |  |
|     |             | L the  | e sequence listing (specify):  |                                    |                                      |  |  |  |  |
|     |             | any  | y table(s) related to sequence listing (specify):  |                                    |                                      |  |  |  |  |
| *   | If ite      | em 4 applie  | es, some or all of those sheets may be marked "supe  | erseded."                          |                                      |  |  |  |  |

International application No.
PCT/FR2004/003406

| Box                 | No. V     |                      |        | ticle 35(2) with regard to novelty, inventive step or industrial applicability; oporting such statement |     |
|---------------------|-----------|----------------------|--------|---|-----|
| 1.                  | Statement |                      |        |   |     |
|                     | Novelty ( | (N)                  | Claims | 1-22  | YES |
|                     |           |                      | Claims |   | NO  |
| Inventive step (IS) |           | Claims               | 1-22   | YES   |     |
|                     |           |                      | Claims |   | NO  |
|                     | Industria | l applicability (IA) | Claims | 1-22  | YES |
|                     |           |                      | Claims |   | NO  |
|                     |           |                      |        |   |     |

2. Citations and explanations (Rule 70.7)

1.

Reference is made to the following documents:

- D1: Z.Y. CHANG AND W.M.C. SANSEN: "Low-noise wide-band amplifiers in bipolar and CMOS technologies" 1991, KLUWER ACADEMIC PUBLISHERS, XP008036864
- D2: US-A-4 034 222 (BOUX RENE ET AL) 5 July 1977 (1977-07-05)

2.

#### 2.1

D1, which is considered to be the prior art closest to the subject matter of independent claim 1, describes (see page 154, figure 1):

a radiation exposure measurement device including at least one element for detecting photons or particles, associated with at least one circuit for acquiring and counting detection events, such that the acquisition circuit comprises a signal processing circuit generating counting pulses corresponding to the detection events, and means for continuously resetting.

Consequently, the subject matter of claim 1 differs from

## INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

this known device in that:

the acquisition circuit further comprises <u>means for</u> <u>discontinuously resetting</u> the pulse signal processing circuit.

The subject matter of claim 1 is therefore novel (PCT Article 33(2)).

The problem that the present invention is intended to solve can be considered to be that of:

decorrelating the process of converting incident charges into voltage from the process of rapidly resetting the output levels of the amplifier stages in the acquisition chain of the radiation detection device.

D2 describes (the references between parentheses apply to said document):

a radiation exposure measurement device (figure 1: A) including at least one element for detecting photons or particles (KA), associated with at least one circuit for acquiring and counting detection events (RA1 - AA), such that the acquisition circuit comprises a signal processing circuit generating counting pulses (QA) corresponding to the detection events, and means for discontinuously resetting (IA) the pulse signal processing circuit.

The solution to this problem, as proposed in claim 1 of the present application, is considered to involve an

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Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

inventive step (PCT Article 33(3)) for the following reason:

Even though D2 describes means for discontinuously resetting the pulse signal processing circuit, it gives a person skilled in the art no indication with regard to the possibility of converting the incident charges, let alone separating the conversion process from the rapid reset process. For this reason, a person skilled in the art aware of the content of D1, would not envisage including the features described in D2.

### 2.2

Claims 2 to 22 are dependent on claim 1 and thus also comply, as such, with the PCT requirements of novelty and inventive step.